

NH Department of Safety Information Technology

SYSTEMS

DEVELOPMENT

METHODOLOGY

SYSTEM DEVELOPMENT METHODOLOGY

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NOTES:

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INTRODUCTION

A Total Quality Management (TQM) Approach

Development mission:

To design, develop, implement, and support business information systems that satisfy the department's information customers (both internal and external), while conforming to the overall mission and goals of the department.

System Development Methodology objective:

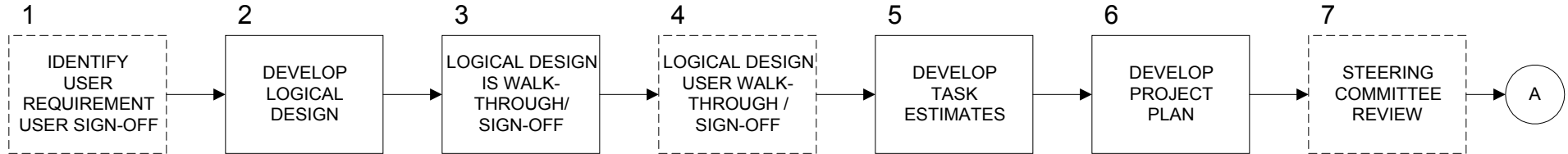
To provide a standard methodology for systems developers to follow to ensure efficient, accurate, timely implementation and support of business processes.

Information system objectives:

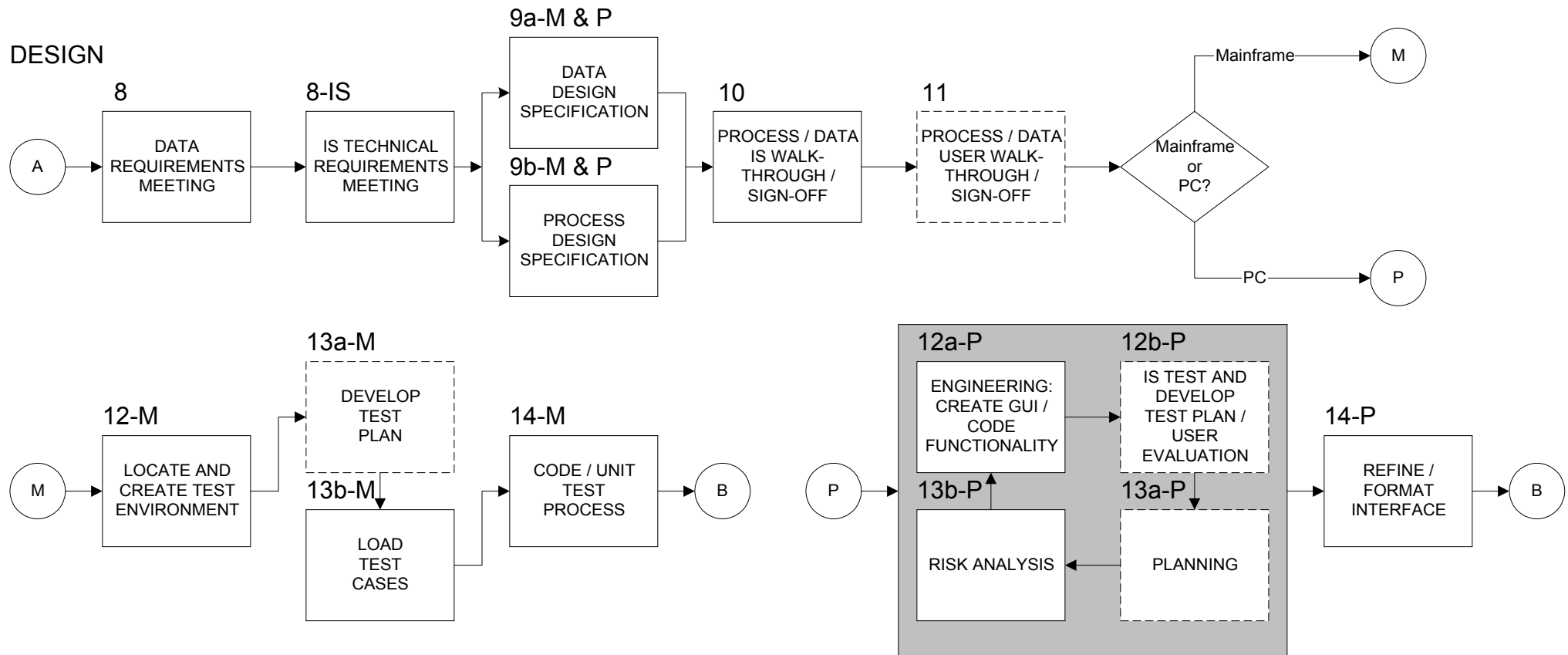
Each information system developed, as well as any complex maintenance, must, within the overall context of the development mission, demonstrate the characteristics of (a) relevancy, (b) completeness, (c) correctness, (d) security, (e) timeliness, (f) economy, (g) efficiency, (h) reliability, (i) usability, (j) maintainability and (k) extensibility.

TASK FLOW CHART SYSTEM DEVELOPMENT METHODOLOGY

ANALYSIS



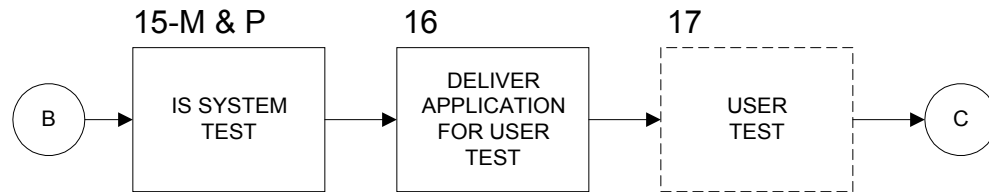
DESIGN



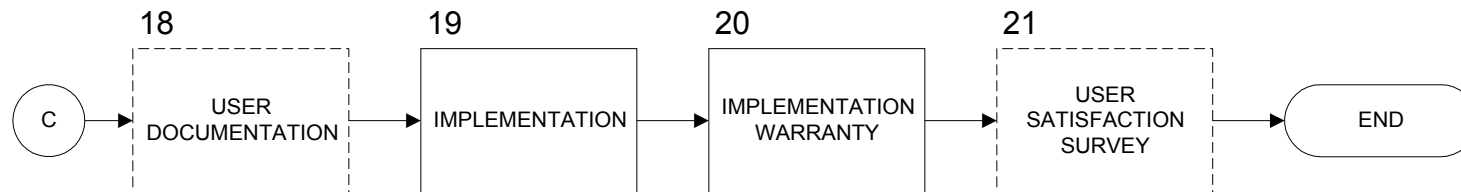
"M" = Mainframe Process "P" = PC Process ----- Denotes user involvement

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TESTING



IMPLEMENTATION



"M" = Mainframe Process "P" = PC Process ----- Denotes user involvement

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Methodology Task #0

Work Request/Follow up/Steering Committee

Purpose: Clarification of work request for clear presentation to the Steering Committee.

Definition:

1. Review submitted work request.
2. If necessary, the Project Manager or designated System Developer conducts a preliminary meeting with the Lead User to discuss and gain insight into work request.
3. IT personnel attaches written summary of clarification to the work request.
4. Meeting of the Steering Committee is held.
5. Work requests are discussed and prioritized by the Steering Committee.
6. Initial economic, technical, and legal issues surrounding requests are discussed.
7. Alternative business solutions are reviewed to determine if other methods exist to satisfy request.

Deliverables:

1. Summary of Clarification
2. Pre-project Lead User Authorization (See Appendix A)
3. SDM Tasks Required for Project (See Appendix B)

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Methodology Task #1

Identify User Requirements

Purpose: Identify user changes in existing systems and new concepts as a result of department form, law, policy and/or procedural changes.

Definition:

1. Each division with functions to be automated assigns/identifies all users of the proposed system and one leader per division to interact with the IT Team for the duration of the project.
2. Users are notified of preparation requirements for a project analysis meeting.
3. Users review their current workflow for the proposed project and prepare copies of input documents, sample output documents and sample screen prints for projects. This is a requirement for IT projects projected to be in excess of 30 hours at the discretion of the Team Leader/Project Manager. This may not be required if work effort is not substantial (e.g., production research).
4. Users and System Developer meet to discuss requirements as follows:
 - User system elements are defined. Included are: human engineering (e.g., human activity, semantics, syntactic and environment analysis), documents and procedures that have an impact on the proposed system.
 - Source input documents, used as a basis for data collection, are gathered.
 - Sample reports, output forms and screen prints are gathered from copies of old system printouts or other sources.
 - Discuss current work processes.
5. System Developer reviews input and output documents, creates current workflow chart and prepares a preliminary user requirements document package.
6. System Developer develops a list of questions and assumptions.
7. System Developer sets a meeting date for the users to verbally answer questions.
8. System Developer sends the list of questions/assumptions to the users with a memo confirming the meeting date.
9. Conduct question/answer meeting with lead users and System Developer on the target date. Both groups update the current workflow chart at the meeting.
10. System Developer documents the questions/answers during/after the meeting.
11. IT Secretary or IT Help Desk distributes updates to answers and current workflow chart to lead users. Users sign-off or make updates on User Requirement documents, if necessary, and will return the project to step 1.9.
12. Users sign-off the User Requirements document.
13. IT Help Desk files the sign-off in project folder.

Deliverables:

1. User Requirements package:
 - Overview and Proposal/Recommendation (See Appendix C)
 - Current Workflow Chart
 - Input documents
 - Sample reports/output requirements
 - Questions/answers document
2. User Requirements sign-off (Users) (See Appendix D)

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Methodology Task #2

Develop Logical Design

Purpose: Develop a conceptual design of an automated process for approval by users.

Definition:

1. System Developer, Project Manager, DBA, Operations, Technical Support, Network Manager and other affected IT area leaders meet to discuss the current conceptual design and impact of the new user requirements. Technical system elements are analyzed. Included are: system architecture, hardware, software, data communications needs, user privileges and physical locations (LAN or WAN) and the direct impact to the overall department computer-based system.
2. Logical Process Flowchart is created to depict screen navigation and integrate business or batch processes into the graphical environment. The following items must be depicted or noted:
 - All input
 - All output
 - All decisions
 - All processes
3. Logical Design Text
 - A detailed conceptual security design, including specific levels and titles/roles recommended for each security level or any changes to the current security.
 - A matrix of business rules, function calculations and edits, table checks/validations, valid data entry ranges.
 - A conceptual design of the recommended Implementation Plan, including specific method such as parallel system operation during implementation.
 - Reviews of “State-of-the-Art” systems similar to the related technologies implemented successfully in other jurisdictions.
4. Identify other applications/programs utilizing database file.
5. Data Flow Diagram is created at the discretion of the System Developer and/or Project Manager.
6. Preliminary data dictionary is created from fields identified in source documents and output requirements and updated through the Logical Design process.
7. As necessary, System Developer may meet with lead users on specific design issues.
8. An enhanced workflow chart, based on the User Requirements package, shall be attached as an Appendix to the Logical Design.
9. As necessary, create or update an Entity Relationship Diagram.
10. Operations, Technical Support and Network Staff finalize the technical architecture and create a network.

Deliverables:

1. Logical Process Flowchart (“visual blueprint”) (See Appendix E).
2. Logical Design text
3. A system diagram of any interfaces or bridges.
4. Data Flow Diagram (See Appendix F).
5. Preliminary data dictionary.
6. Enhanced Workflow Chart.
7. An Entity Relationship Diagram.

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8. A network topology.

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Methodology Task #3

Logical Design IT Walk-through/Sign-off

Purpose: All IT staff involved in the Logical and Physical Design meets to review and update the conceptual Logical Design package.

Definition:

1. System Developer distributes Logical Design package, at least 5 working days, prior to walk-through meeting.
2. Conduct a walk-through meeting, moderated by System Developer, for reviewing the actual Logical Design package.
3. Revisions are made if necessary.
4. All represented IT areas sign-off approval.
5. IT Help Desk files the sign-off in the project folder.

Deliverables:

1. Logical Design sign-off (IT Managers) (See Appendix D)

Note: System Developer or Project Manager is encouraged to include their staff members in this meeting as appropriate.

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Methodology Task #4

Logical Design User Walk-through/Sign-off

Purpose: To ensure users understand and approve of the concepts of the Logical Design.

Who Should Attend:

Attendance of lead users identified in step 1.1 and user testing staff at this walk-through meeting is critical to the integration of the Logical and Physical Design phases of the project. The Physical Design specifications are based on the Logical Design concepts. If the Logical Design is incorrect, time will be lost redoing the Physical Design.

Definition:

1. System Developer distributes Logical Design package, at least 5 working days, prior to walk-through meeting.
2. Conduct a walk-through meeting, moderated by System Developer, for reviewing the actual Logical Design package with users.
3. System Developer elects a scribe for the meeting. Scribe shall document a “to-do”/question list and should be project knowledgeable.
4. Users sign-off their approval at the meeting or following completion of user requested updates of the Logical Design package.
5. IT Help Desk files the sign-off in project folder.

Deliverables:

1. Logical Design sign-off (Users) (See Appendix D)

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Methodology Task #5

Develop Task Estimates

Purpose: Establish a written set of estimates for each project task in a standard format to be utilized by Microsoft Project.

Definition:

1. System Developer, with the help of the Project Manager when necessary, develops physical design, testing and implementation effort hour estimates using the IT Estimating Standards.
2. The Project Manager drafts resource assignments to each task.

Deliverables:

1. Effort Hour Estimates
2. Resource Assignments

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Methodology Task #6

Develop Project Plan

Purpose: Project Manager works with System Developer to establish a written project plan and Project Schedule, using Microsoft Project, setting project milestones, resources and completion dates.

Definition:

1. Define a work breakdown structure (WBS), list of orderings and milestones.
2. Prepare Project Schedule to include the following fields:
 - Task name.
 - Duration.
 - Start date.
 - Finish date.
 - Effort.
 - Resource allocation (percentage).
3. Determine the critical path.
4. Level resource histogram.
5. Publish Project Schedule to IT and the Steering Committee.
6. Monitor and revise Project Schedule, as necessary, as project progresses.

Deliverables:

1. Microsoft Project Package
2. Project Schedule for publication to Steering Committee

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Methodology Task #7

Steering Committee Review

Purpose: The Steering Committee assesses the size of the project, estimated project milestone time frames and end date; then determines changes in scope necessary for timely project completion.

Definition:

1. Steering Committee reviews functions requested in the Logical Design and distinguishes “required” function versus “would like to have” functions. Determination is made if they are necessary at this time, or if they should be deferred, using the project plan and System Developer recommendations as a reference.
2. Steering Committee develops a revised project scope based on modifications to the User Requirements package.
3. Changes in project scope at anytime during the project will be reflected in the “change management” task of the IT Project Schedule.

Deliverables:

1. New Work Request for any deferred functions

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Methodology Task #8

Data Requirements Meeting

Purpose: To ensure that the logical process design and data design are compatible.

Definition:

1. Gather materials needed:
 - Preliminary data dictionary and Data Flow Diagram.
 - Logical Process Flowchart (detailed specifications not needed at this point but detailed knowledge of processing and data requirements will be determined).
2. Affected areas meet to review each process in detail to ensure the understanding of the information domain for the software, as well as the required function, performance and interfacing:
 - Detailed data dictionary and characteristics.
 - Index requirements.
 - Default values and static information identified.
 - Attachments to external data sources noted for impact on other systems.
 - Proposed data access and level of security.
 - Audit tracking requirements.

Deliverables:

1. N/A (updates only)

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Methodology Task #8-IT

Technical Requirements Meeting

Purpose: To ensure the requirements determined in the Logical Design task (step 2.1) are formalized and can be met within the time constraints defined in the project schedule.

Definition:

1. Set up meeting with Technical Support to formalize the system architecture, hardware, software, data communications needs, user privileges and physical locations (LAN or WAN) and the direct impact to the overall department computer-based system determined in the Logical Design task (step 2.1).
2. Technical Support performs required function to complete task.

Deliverables:

1. Notification of completion from Technical Support to Project Manager

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Methodology Task #9a-M

Data Design Specification

Purpose: Prepare and provide database forms and diagrams to support the Physical Design process.

DBA Tasks:

1. Responsible to interpret the database forms for validity.
2. Maintain the data flow diagram (Bachman).
3. Return sign-off documents.

Definition:

1. Ensure that a Data Requirements Meeting (Methodology Task #8) has been held with all affected IT Team Members.
2. Break down the logical data area (index) according to the IDMS structure schema, subschema, set, records, elements and any other resources.
3. Design program specifications for any necessary data conversions (such as DB utilities, COBOL batch programs, etc.) required to support the DB elements.

Deliverables:

1. Copy of forms/diagrams and sign-offs (See Appendix I)

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Methodology Task #9a-P

Data Design Specification

Purpose: Finalize the data dictionary, from requirements produced in task #8, to support Physical Design processing and user query requirements.

Definition:

1. Ensure that a Data Requirements Meeting (Methodology Task #8) has been held with all affected IT Systems Developers prior to specification writing.
2. Normalization of data structure.
3. Create Entity Relationship Diagram.
4. Finalize data dictionary, including descriptions, default values, format and input masks.
5. Design program specifications for any necessary data conversions required to support the new data structure.
6. Finalize the Data Flow Diagram, if created.
7. Produce data definition reports:
 - Table descriptions, including field and index properties.
 - Image of Entity Relationship Diagram.
 - Source documents containing field names.

Deliverables:

1. Entity Relationship Diagram (See Appendix G)
2. Finalized Data Dictionary
3. Finalized Data Flow Diagram, when applicable

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Methodology Task #9b-M

Process Design Specification

Purpose: Develop a textual blueprint to translate the Logical Design into physical instructions, to be used by System Developer in completing this task.

Definition:

1. Enhance and refine the Work Breakdown Structure (WBS).
2. Develop sequence of programs (batch/on-line/utilities).
3. Design high level program flow chart.
4. Assign program numbers to each program as needed according to IT naming convention standards. Develop a user friendly textual explanation (Summary of Specifications) of the program purpose and indicate which Logical Design requirements it supports. Include detail explanations of how it supports the Logical Design.
5. Include detailed technical instructions, including libraries used, critical assumptions, inputs/outputs, report/screen layouts, copybook modifications, working-storage information, procedure division additions/modifications, findstring printouts for modified copybooks. See the Documentation Standard for a sample format. Develop instructions, clearly describing modifications/enhancements (not pseudo code), at the level of the programmer the specification is to be assigned.
6. Prototype for walk-through, when applicable.

Deliverables:

1. N/A (updates only)

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Methodology Task #9b-P

Process Design Specification

Purpose: Develop a textual and graphical blueprint to translate the Logical Design into a software architecture, with procedural detail and interface characterization, to be used by System Developer in completing this task.

Definition:

1. Ensure that a Data Requirements Meeting (Methodology Task #8) has been held with all affected IT Systems Developers prior to specification writing.
2. Create working prototype for walk-through. This design process translates requirements into a representation of the software that can be assessed for quality before detailed coding begins.
3. Include detailed technical instructions, including library references and critical assumptions.
4. Identify complicated algorithms or methods required for processing. Include detailed technical instructions to be used in accomplishing these tasks and the objects affected.
5. Finalize the Logical Process Flowchart.

Deliverables:

1. Software Prototype
2. Technical instructions:
 - Library references
 - Critical assumptions
 - Complicated algorithms or methods
3. Finalized Logical Process Flowchart (See Appendix E)

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Methodology Task #10

Process/Data IT Walk-through/Sign-off

Purpose: Ensure the IT Process Design specifications integrate with other systems, as necessary, and uphold the Logical Design.

Definition:

1. System Developer distributes Process Specifications, at least 5 working days, prior to the-walk-through meeting.
2. Meet with all represented IT areas to review any comments and questions and revise as necessary.
3. All represented IT areas sign-off approval.
4. IT Help Desk files the sign-off in the project folder.

Deliverables:

1. Process Specifications sign-off (IT Representatives) (See Appendix D)

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Methodology Task #11

Process/Data Specification User Walk-through/Sign-off

Purpose: Ensure users remain in agreement with the design by having users review and approve Process Design Specifications.

Who Should Attend:

Attendance of Logical Design Walk-through and Testing (future) users at this walk-through is critical. All program code is based on the process design specification. If these specifications are incorrect, time will be lost re-doing the specifications, getting them re-approved and then re-coding the programs. System Developers to review any comments and questions and revise as necessary.

Definition:

1. System Developer sets up walk-through meeting, time and location with users and IT staff.
2. System Developer distributes Process Specifications, at least 5 working days, prior to walk-through meeting.
3. Conduct a walk-through meeting for reviewing the actual Process Specifications package with users.
4. Users sign-off their approval at the meeting or following completion of user requested updates of the Process Specifications package.
5. System Developer continues to meet with Lead users to identify test case criteria as necessary.
6. IT Help Desk files the sign-off in project folder.

Deliverables:

1. Process Specifications sign-off (Users) (See Appendix D)

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Methodology Task #12-M

Locate and Create Test Environment

Purpose: Identify and create a physical testing area to conduct IT Testing.

DBA Tasks:

1. DBA apply changes to IT test database, as described in Task #9a-M, in a timely fashion and notify project team.
2. Ensure all dictionaries have been updated.

Definition:

1. System Developers apply changes to database as described in Task #9a-M.
2. System Developers provide documents to DBA to use in completing DBA Tasks.
3. Ensure documents are returned from DBA and filed in project folder.

Deliverables:

1. Signed documents (DBA), when applicable
 - IDMS Migration
 - Subschema change
 - Subschema request
 - DB change request
 - Data Dictionary template definitions

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Methodology Task #12a-P

Engineering: Create GUI/Code Functionality

Purpose: The process and data specifications must be translated into a machine-readable form. Using established guidelines, a graphical user interface (GUI) with coded functionality is developed.

Definition:

1. System Developer converts design specifications to programming code to create the GUI. Custom functions are written, according to design specifications, to satisfy complicated algorithms or methods required for processing. When possible, the prototype is utilized as a basis and enhanced.
2. System Developer designs objects with uniformity and consistency using established guidelines for object naming conventions, control usage, form navigation, visual style and coding methods. Guidelines are followed to ensure System Developer remains mindful of the important concepts of code reusability, maintainability and portability. (See PC Development Standards for GUI Guidelines).
3. System Developer is cognizant of software quality metrics throughout this phase. Metrics derived before implementation provide the developer with a quantitative basis for making design and testing decisions. Program complexity, effective modularity and program size should be closely monitored.

Deliverables:

1. Enhanced prototype, evolving with each iteration

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Methodology Task #12b-P

IT Test and Develop Test Plan/User Evaluation

Purpose: Testing focuses on the logical internals of the software, ensuring that all statements have been tested, and on the functional externals, conducting tests to uncover errors and ensure that defined input will produce actual results that agree with required results.

Definition:

1. System Developer tests coded functions and all object code to ensure expected operation.
2. User involvement at this stage is utilized to evaluate the engineering work and make suggestions for modification. Based on user input, the next phase of planning and risk analysis occur moving the developer towards the engineering of a completed system.
3. Establish a comprehensive structured plan to provide guidance for user testing in task #17, to uphold the Physical Design.

Deliverables:

1. User Test Plan (See Appendix K)

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Methodology Task #13a-M

Develop Test Plan

Purpose: Establish a comprehensive structured plan to provide guidance for System and User Testing to uphold the Physical Design Specifications and any design addendum.

Definition:

1. System Developer and Users develop test plan/matrix and security matrix.

Deliverables:

1. Test plan/matrix
2. Security matrix
3. Sign-off (Users)

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Methodology Task #13a-P

Planning

Purpose: Planning during the rapid application development (RAD)/GUI Development phase focuses on a review of the Logical Design.

Definition:

1. System Developer reviews user suggestions for modifications alongside the Logical Design to ensure the core architecture is upheld.

Deliverables:

1. N/A (updates only)

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Methodology Task #13b-M

Load Test Cases

Purpose: Populate IT Test environment.

Definition:

1. Update test environment as necessary from Task #13a-M.
2. System Developer notifies that test environment is available for use.

Deliverables:

1. N/A

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Methodology Task #13b-P

Risk Analysis

Purpose: Risk analysis during the rapid application development (RAD)/GUI Development phase focuses on a review of the Data and Process Design Specifications.

Definition:

1. System Developer reviews user suggestions for modifications alongside the Data and Process Design Specifications to ensure modifications will not cause detrimental implications to the design.

Deliverables:

1. N/A (updates only)

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Methodology Task #14-M

Code / Unit Test Process

Purpose: Create/change source and object versions of each program required to automate the function according to the Physical Design Specification.

Definition:

1. Project Manager re-estimates effort hours for this task with the System Developer as necessary.
2. System Developer creates new or alters existing program as directed by the process specification.
3. IDD and COBOL Standards Review are performed as standards dictate, determined by Project Manager.

Deliverables:

1. N/A.

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Methodology Task #14-P

Refine/Format Interface

Purpose: System Developer ensures GUI conforms to established guidelines. (See PC Development Standards for GUI Guidelines and Security Implementation).

Definition:

1. Refines and formats all visual objects and checks to ensure adherence to established guidelines. Specific areas of review include:
 - Font usage.
 - Field alignment.
 - Background and foreground color usage.
2. Creates on-line user documentation:
 - Custom command bars (menu bars and tool bars).
 - Status bar text property.
 - Tool-tip property.
3. Completes interface and creates/reviews:
 - Module level error handling.
 - Startup options.
 - Implementation of security: adding groups, users and assigning permissions.
4. When applicable, develops plan for data migration and tests.

Deliverables:

1. Software Application beta version
2. Data Migration Plan, when applicable

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Methodology Task #15-M

IT System Test

Purpose: Ensure that programs function in an integrated, sequential fashion upholding the Physical Design Specifications.

Definition:

1. Refer to Test Standards Section System Testing.
2. DBA apply changes to user test environment.

Deliverables:

1. User Test Plan (See Appendix K)

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Methodology Task #15-P

IT System Test

Purpose: Ensure that programs function in an integrated fashion upholding the Physical Design Specification.

Definition:

1. Software quality will be tested by Project Manager and metrics applied in the following areas:
 - Correctness: the degree to which the software performs its required function.
 - Maintainability: the ease with which a program can be corrected if an error is encountered, adapted if its environment changes, or enhanced if the user desires a change in requirements. (Ambiguous code or complex algorithms should be well documented with comments.)
 - Integrity: measuring a system's ability to withstand attacks to its security and measuring a system's ability to prevent erroneous entry of data.
 - Usability: "user-friendliness" will be quantified by measuring the software for (1) the skill required to learn the system, (2) the time required to become moderately proficient in the use of the system, (3) the net increase in productivity measured when the system is used by someone who is moderately proficient and (4) a subjective assessment of users' attitudes toward the system.
2. Project Manager provides System Developer with written evaluation.

Deliverables:

1. Project Manager Written Evaluation

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Methodology Task #16

Deliver Application for User Test

Purpose: Provide users with documented test plan to be utilized in completing user testing.

Definition:

1. System Developer organizes/creates/copies the following formal documents:
 - Finalized Test Plan.
 - User Testing / Deployment Schedule.
 - Memo containing a list of any design enhancements and design changes **not** included as part of the Logical or Physical Design, known as the Deliverables List.
2. System Developer distributes documents to Lead Users.

Deliverables:

1. Finalized User Test Plan (See Appendix K)
2. User Testing/Deployment Schedule
3. Memo to Users

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Methodology Task #17

User Test

Purpose: Ensure that programs function in an integrated fashion upholding the Physical Design Specifications.

Definition:

1. User follows Test Plan using specific cases and modified accordingly.
2. User performs daily work using test cases.
3. User attempts non-conventional transactions with the intent of causing errors.
4. User reports problems immediately to System Developer by completing a User Test Problem Report Form (See Appendix L) for each test problem and forwarding it immediately to the System Developer to be tracked and monitored.
5. Debugging and error correction continues during user testing.

Deliverables:

1. All completed test plans (Sign-off Users) (See Appendix D)

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Methodology Task #18

User Documentation

Purpose: Provide a textual user reference manual describing and illustrating the usage of the entire software application including work flow, etc.

Definition:

1. A compilation of work flowcharts, screen and report examples and textual narratives that describe application functions and depict the user command sequence. (Utilize developer toolkit, when applicable.)
2. See User Documentation Standards for required components and to reference a sample.
3. Project Manager ensures users sign-off on documentation or seeks Steering Committee waiver.

Deliverables:

1. Hardcopy of User Documentation, if requested (See Appendix M)
2. Sign-off/Waiver (User/Steering Committee) (See Appendix D)

SYSTEM DEVELOPMENT METHODOLOGY

Methodology Task #19

Implementation

Purpose: To promote tested, user-authorized software application to the user environment.

Definition:

1. System Developer develops an Implementation Plan (See PC Development Standards for Rules for Deployment of an Application).
2. System Developer initiates and tracks the progress of the Plan and ensures completion of all steps.
3. Mainframe Task: System Developer contacts DBA to perform processes used in creating test environment, as in Task #15-M, and uses the same documents to create production environment.
4. PC Task: System Developer contacts Network Manager to discuss the Plan for a new network directory, provide a list including a new user group, users and necessary network rights.
5. System Developer notifies the Project Manager of the project's scheduled completion.
6. System Developer performs data migration according to established plan, when applicable.
7. IT Help Desk files completed work request and notifies user(s).

Deliverables:

1. Implementation Plan
2. PC Deliverable: List including network directory, group, network rights and users
3. Completed work request signed-off (System Developer and/or Project Manager)

SYSTEM DEVELOPMENT METHODOLOGY

Methodology Task #20

Implementation Warranty

Purpose: A period of time immediately following Implementation allocated for correcting post-implementation problems as a priority, to be monitored.

Definition:

1. The Project Manager tracks the production warranty for 30 days. This is the time in which users may submit Production Warranty Request Forms and expect timely turnaround for IT corrections. Forms are considered Production Warranty only if they cite functionality previously outlined in the Logical Design, Physical Design and Deliverables List.

Deliverables:

1. N/A

SYSTEM DEVELOPMENT METHODOLOGY

Methodology Task #21

User Satisfaction Survey

Purpose: Measure the user satisfaction level of an Implementation and IT performance.

Definition:

1. IT Help Desk distributes User Satisfaction Surveys to Lead User and Steering Committee Representative, affected by the implementation, 10 to 20 working days following the implementation date.
2. IT Help Desk collects results.
3. Project Manager reviews results.

Deliverables:

1. User Satisfaction Survey (See Appendix O)

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SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX A

INFORMATON SERVICES PRE-PROJECT LEAD USER AUTHORIZATION

Project Name: _____ Date: _____

	Sign-Off User	Lead Contact User	Participating User(s)
Commissioner's Office	_____	_____	_____
Administration	_____	_____	_____
Motor Vehicle	_____	_____	_____
State Police	_____	_____	_____
Safety Services	_____	_____	_____
Fire Services	_____	_____	_____
Fire Standards & Training	_____	_____	_____
Emergency Medical Services	_____	_____	_____

Definitions:

- Sign-Off User:** The only division user authorized to sign off each step of the methodology for a given project.
- Lead Contact User:** The user who will serve as the lead contact for setting up meetings and answering key questions during the project and will participate in all steps of the methodology involving users.
- Participating User(s):** Other eventual system users who will help with all phases of the methodology such as user requirements, design and testing.

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX B

State of New Hampshire DEPARTMENT OF SAFETY INFORMATION SERVICES

SDM Tasks Required for Project

Project:

I, _____, am granting permission to bypass the use
(Project Manager and/or Group Leader)
of the System Development Methodology for this project.

or

I, _____, am requesting that the following tasks
(Project Manager and/or Group Leader)
(√) be the only tasks required for this project:

	Task 1	User Requirements
	Task 2, 3, 4	Logical Design
	Task 5	Develop Task Estimates
	Task 6	Develop Project Plan
	Task 7	Steering Committee Reviews
	Task 8	Data Requirement Meeting
	Task 8 – IT	IT Technical Requirement Meeting
	Task 9a, 9b, 10, 11	Data Design Specification, Process Design Specification, and Walkthroughs
	Task 12, 13, 14	Testing
	Task 15	IT System Test
	Task 16, 17	User Test
	Task 18	User Documentation
	Task 19	Implementation
	Task 20	Implementation Warranty
	Task 21	User Satisfaction Survey

Comments:

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX C

State of New Hampshire DEPARTMENT OF SAFETY INFORMATION TECHNOLOGY User Requirements

Project: Human Resources Positions Tracking System

Objective: The purpose of the development of a new system is to aid the user in effectively managing and maintaining employee, job position and benefit data for human resources. Development will encompass the integration of manual components into automated system functions. This will eliminate redundant data entry and manual methods presently applied to accomplish the tasks of data entry, creating employee evaluation lists, compiling worksheets for the reconciliation of benefit costs, providing employee and position information in various report formats and tracking vacant job positions and job positions that have temporary grade changes. Automating the manual procedures into a comprehensive system will result in greater efficiency, data integrity and increased capabilities for producing reliable reports.

Requested by: Tim Mason / Sue Anderson (Business Office)

Developer: Susan Stevens (Information Technology)

Current procedures in place include:

- Maintenance of data stored in a “flat file” format (denormalized) Access 2.0 database.
- Maintenance of an extensive Microsoft Excel spreadsheet used for tracking employee benefit costs.
- Manual compilation and computation of data for monthly reconciliation of employee benefit costs.
- Various manual filing routines.
- Redundant data entry and handwritten entry used in compiling information for various reports.

Problems with current procedures and methods of data maintenance:

- Time consuming and redundant data entry.
- Limited functionality.
- Provides no assurance of data integrity or security.
- Manual data compilation and computation that may produce unreliable results.

PROPOSAL

Required system functions needed to complete the necessary tasks involved in tracking information include:

- Efficient data entry and management of employee, job position, and employee benefit data.
- Supplying management with employee evaluation information.
- Compiling and computing data for the monthly reconciliation of employee benefit costs.
- Compiling and computing data for the preparation of informational and analytical reports, as well as managerial reports.

Proposed system features:

- Integration of all manual procedures into a comprehensive, automated system.
- Maintenance of data using automated techniques to ensure data integrity and data reusability.
- Reliability of data sources.
- Automated compilation and computation of data.
- System generated printable items and reports.
- Assistance in making decisions with analytical reports that adhere to a greater level of precision and coherence.
- Reflect an extended level of professionalism on the agency with higher levels of credibility in reporting.

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX D

State of New Hampshire
DEPARTMENT OF SAFETY
INFORMATION TECHNOLOGY
Project Sign-off

To: Tim Mason

Project: Human Resources Tracking System

Requested by: Tim Mason / Sue Anderson (Business Office)

Developer: Susan Stevens

Due to Help Desk by: May 1, 2000

Task sign-off for:

- | | |
|--|---|
| <input type="checkbox"/> User Requirements | <input checked="" type="checkbox"/> Process / Data Specification (User) |
| <input type="checkbox"/> Logical Design (IT) | <input type="checkbox"/> User Test |
| <input type="checkbox"/> Logical Design (User) | <input type="checkbox"/> User Documentation |
| <input type="checkbox"/> Process / Data Specification (IT) | |

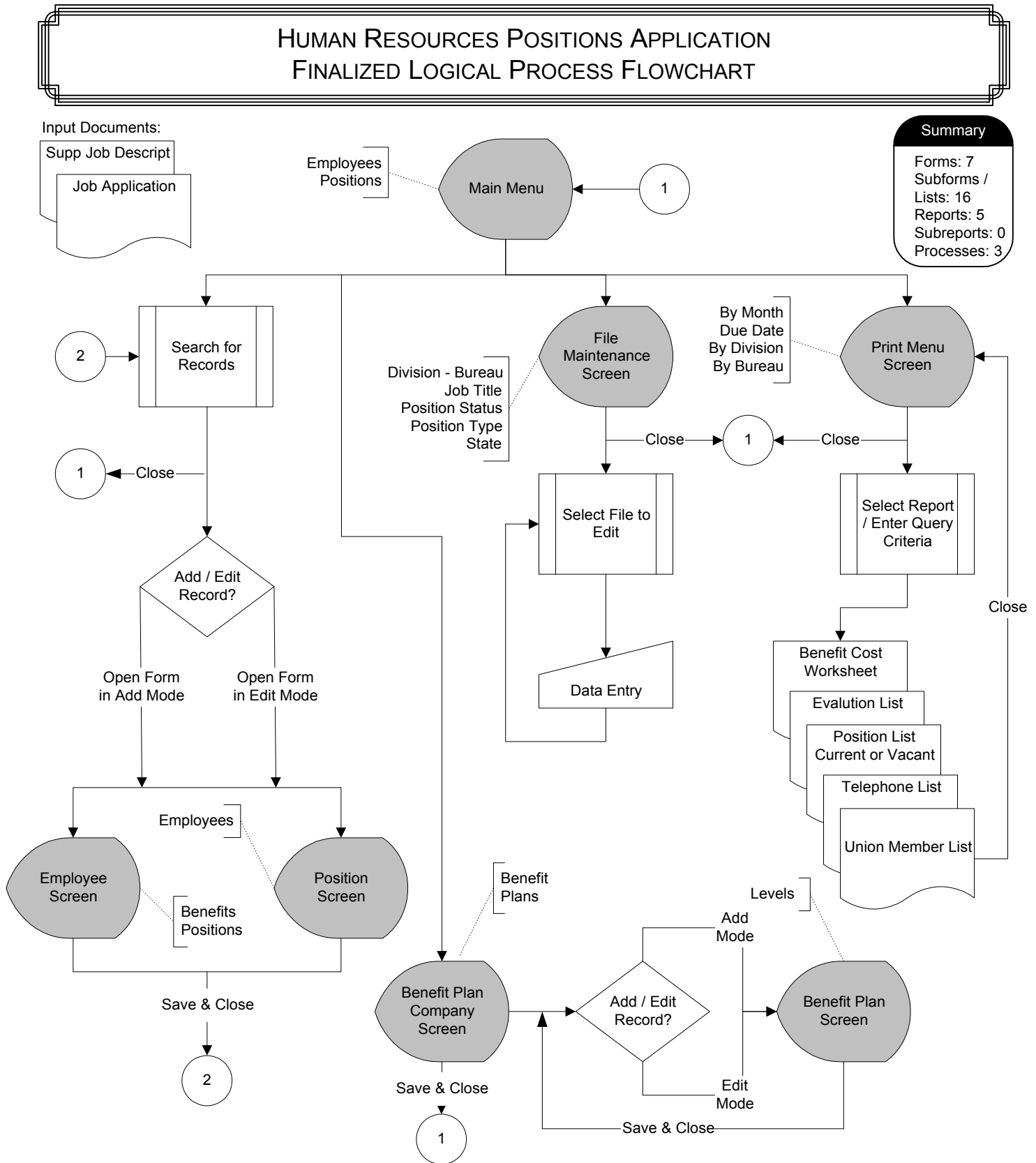
Comments:

Authorized Signature(s):

<input checked="" type="checkbox"/> _____	<input checked="" type="checkbox"/> _____
Tim Mason	Susan Stevens, Developer
Date	Date

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX E



SYSTEM DEVELOPMENT METHODOLOGY

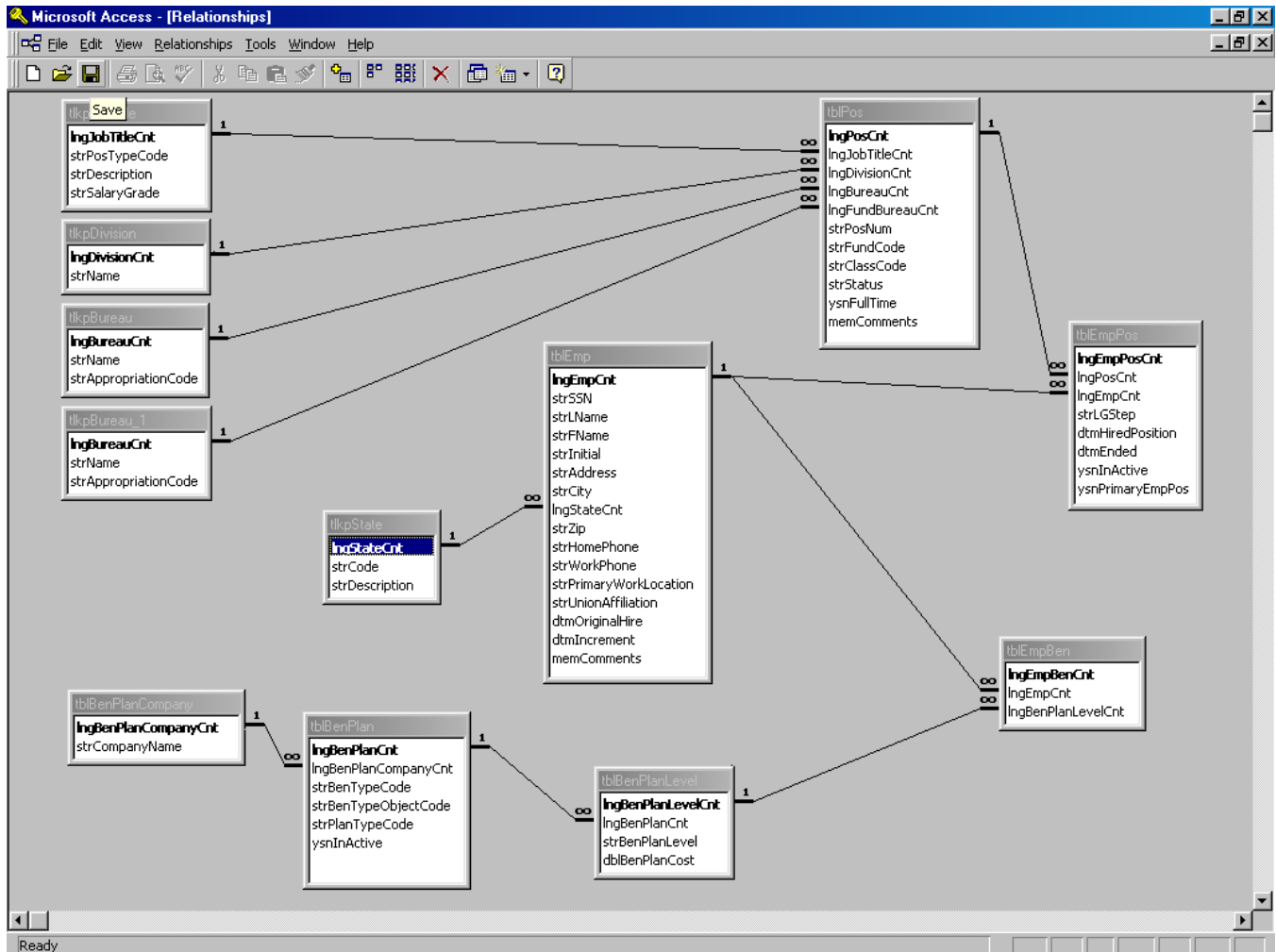
APPENDIX F

Data Flow Diagram Sample (Mainframe)
(To be defined at a later date)

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX G

Entity Relationship Diagram Human Resources Positions Tracking System



SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX H

Walkthrough Record
(To be defined at a later date)

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX I

IT Estimating Standards
(To be defined at a later date)

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX J

State of New Hampshire DEPARTMENT OF SAFETY INFORMATION TECHNOLOGY

DETAILED PROGRAM DESIGN SPECIFICATIONS BATCH

PROGRAM ID:		LANGUAGE:	
SUBSCHEMA:		SUBSYSTEM:	
DATE:		AUTHOR:	
COMPILE REQUIREMENTS:		JOB for EXEC:	
<u>PURPOSE/FUNCTION</u> <i>[enter detail specifications on how the program is to work]</i>			
<u>PARAMETERS</u> <i>[enter any parameters used by the program]</i>			
<u>COPYBOOKS USED</u> <i>[enter the names of work records or database records located within working-storage of the program]</i>			
<u>MODULES USED</u> <i>[enter the names of any IDD modules being called or used as copybook and on-line programs being called]</i>			

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX J (continued)

<u>INPUT or DATABASE AREAS</u> <i>[enter the names of the input files or DB areas used by the program]</i>	
<u>OUTPUT</u> <i>[enter the names of the output files generated by the program]</i>	
EDITS or SPECIAL ALGORITHMS	
CRITICAL ASSUMPTIONS	
CALLS TO OTHER PROGRAMS <i>[On-line or CICS programs]</i>	

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX J (continued)

State of New Hampshire

DEPARTMENT OF SAFETY
INFORMATION TECHNOLOGY

DETAILED PROGRAM DESIGN SPECIFICATIONS DIALOGS

DIALOG NAME: SUBSCHEMA: DATE: PROCESS MODULE:	MAP NAME: SUBSYSTEM: AUTHOR:
<u>PURPOSE/FUNCTION</u> <i>[enter detail specifications on how the process module for the dialog is to work]</i>	
<u>WORK RECORDS</u> <i>[enter the names of work records used by the process module]</i>	
<u>MAP RECORDS</u> <i>[enter the names of all map records used within process module or called modules]</i>	
<u>DATABASE RECORDS USED IN RETRIEVAL MODE</u> <i>[enter the names of all database records used within process module or called modules along with their database areas]</i>	

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX J (continued)

<u>DATABASE RECORDS USED IN</u> <u>UPDATE MODE</u> [enter the names of all database records used within process module or called modules along with their database areas]	
<u>CALLED MODULES</u> [enter the names of all IDD modules or on-line programs being called within the process module]	
<u>TABLES</u> [enter the names of all table names used within process module]	
<u>SECURITY</u> [enter any special security requirements]	

[illegible]

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX J (continued)

CURSOR MOVEMENT		
Field Name	If Entered GO TO	If not Entered GO TO

PFKEY NAVIGATION	
PFKEY	MAPS TO

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX K

State of New Hampshire DEPARTMENT OF SAFETY INFORMATION TECHNOLOGY

TEST PLAN

Project: DWI for Boat Registrations

Developer: Claire Janelle

Test By: _____ **Start Date:** _____

Business Case: Anyone driving a motorboat while under the influence will have their driving license suspended according to RSA 270:48a. Anyone convicted of a DWI while in a motor vehicle will also lose their privilege to operate a motorboat in the waters of New Hampshire for one year (this verbiage must appear in their suspension letter). No points are associated with boat DWI's. New codes for motorboat DWI's are DB10, DB15, DB20, DB25 and DB30. Boating DWI's appear on certified, non-certified and insurance copies. They are similar to off the road recreational vehicles (OH10 - OH30 codes). DI35 and OH35 codes are no longer valid. When system was first in place, these codes were used for appeals. The off road recreational vehicle DWI suspensions DO NOT prohibit operating a motorboat and verbiage should not appear on their suspension letter.

ACTION: Create violation and Suspend license privileges for a person with boating DWI's for each of the following types.

REASON CODE	PRIVILEGE	REQUIREMENT	SUSPENSION TIME
DB10	L	A	90 days
DB15	L	A	90 days
DB20	L	7, N	3 years
DB25	L	8, N, P	3 years
DB30	L	A, N	1 year

Were the VI19 records created successfully? **Y** **N**

Comments:

Were the VI12 records created successfully? **Y** **N**

Comments:

Do the fees due calculate correctly? **Y** **N**

Comments:

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX K (continued)

ACTION: Create violation and Suspend license privileges for a person with vehicle DWI's for each type.

REASON CODE	PRIVILEGE	REQUIREMENT	SUSPENSION TIME
DI10	L	A	90 days
DI15	L	A	90 days
DI20	L	7, N	3 years
DI25	L	8, N, P	3 years
DI30	L	A, N	1 year

Were the VI19 records created successfully? **Y** **N**

Comments:

Were the VI12 records created successfully? **Y** **N**

Comments:

Do the fees due calculate correctly? **Y** **N**

Comments:

ACTION: Create a DWI violation and suspension for an off the road recreational vehicle using OH10, or OH15, or OH20, or OH25, or OH30 for reason a code. The message "In addition, you have lost your privilege to operate a motorboat on the waters of this state for a period of one year from the date of conviction listed above." should not appear on the suspension letter. Did it? **Y** **N**

Comments:

ACTION: Run VISUS01J batch job using the suspension effective date as the current date. Were suspension letters produced for each DWI as shown in folder? **Y** **N**

Comments:

ACTION: Create a certified copy of the driving record, on-line and batch. The boating DWI's should appear on the document(s). Did they? **Y** **N**

Comments:

ACTION: Create a non-certified copy of the driving record, on-line and batch. The boating DWI's should appear on the document(s). Did they? **Y** **N**

Comments:

ACTION: Create an insurance copy of the driving record (on-line and batch). The boating DWI's should appear on the document(s). Did they? **Y** **N**

Comments:

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX K (continued)

ACTION: Restore license privileges and print restoration letter (on-line and batch). Did the VI12 record update correctly (status and restore date)? **Y** **N**

Comments:

Did the restoration letter state all license/operating privileges were restored (providing there were no other open suspensions to prevent restoration)? **Y** **N**

Comments:

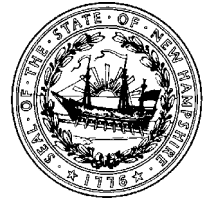
ACTION: Create an on-line insurance copy for Concord Group using VIINQ IN command. Was the insurance copy created on-line with the boating DWI's appearing on it? **Y** **N**

Comments:

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX L

New Hampshire Department of Safety Information Technology **User Test** Problem Report Form



Instructions

Fill out this form completely and send it to:

Computer Help Desk	Or	E-mail:	Help Desk
Information Technology NH Department of Safety	Or	Fax:	271-5534

If you have any questions about how to fill out this form, call the Computer Help Desk at 271-7021.
A listing of user test problems can be produced at your request during this phase.

Project Information

Project Name: Human Resources Tracking System Original Work Request #: 0973

Source

Date Reported: 6/7/00 Time Reported: 11:30
Name of person making report: Sue Anderson Phone No. of person making report: 6874
Division and bureau: Administration, Business Office

Description of Problem

Describe the user test problem. Please be clear and specific.
Exiting the employee screen produces an error. See attached for details.

If any other information (such as a sample of a report, the text of an error message, or a printout of a screen) would help us understand the problem, please attach it.

For Information Technology use ONLY

Date Completed: 6/7/00 Completed By: Susan Stevens

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX M

ADD A DAY TO THE MASTER SCHEDULE

Driver Licensing User Documentation

Function: To change the master schedule as to days and/or time slots for which appointments may be scheduled. This master schedule is on a per location basis.

Instructions:

- Changes to be made by the supervisor of Driver Licensing.
 - If changes to the master schedule is to occur between the 14th through the 20th of the month, contact Operations to let them know **not to run the Monthly Renewal Job until you notify them via E-Mail.**
1. From the Driver License Menu, choose Option 12 Master Setup and press <enter>.
 2. Observe DLSCH11M Master Schedule Parameters - #1 displayed. Key in the location code and press <enter>.
 3. Observe the current schedule for that location. Position the cursor to the new day to be scheduled and enter an 'X', then <tab> to the From/To Time fields and enter 08:30, 1 6:15 respectively then press <enter>.
 4. Observe 0052I Screen Processed displayed.
 5. Position the cursor on the select field for the new day to be scheduled, enter an 'X' then press <enter>.
 6. Observe DLSCH12M Master Schedule Parameters #2 screen displayed with the correct location, day and times.
 7. Press <tab> to move your cursor to enter the capacity for the number of tests to be allowed for each time that day.
 8. When the screen is filled, press <enter> and observe 0052I Screen Processed displayed.
 9. Press PF8 to scroll to the remaining hours for the day. Enter those capacities then press <enter>. Observe 0052I Screen Processed displayed.
 10. Toggle using PF7 and PF8 to verify that the times and capacities entered are correct.
 11. When completed, press PF01 to return to the 1st Screen and update.
 12. For good measure, again position your cursor on the select field for the new day, press <enter> and verify that your changes are there.
 13. When completed, press the clear key or PF12 to return to the Driver License Menu.

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX N

MONTHLY RENEWAL INSTRUCTIONS

Driver Licensing System Documentation

Overview: On the 15th or the next working day thereafter of each month, the driver license renewal job is run. That job consists of running three jobs: DLREN40J, DLSCD1J, DLREN41J and DLXSCH1J. Operations automatically submits and runs DLREN40J and will deliver the report generated from that job. After verification of certain data, the 'go-ahead' must be given to Operations to release and run the other jobs listed above. This must be done by email for tracking. Follow the steps below to assure that the monthly renewal process runs smoothly.

1. Operations submits and runs DLREN40J which will determine how many appointment slots are to be created and how many are required.
2. The report DLUREN02 will be delivered to Driver Licensing. The supervisor must check that the report is for the month that is two months from run date. Also review the Testing Capacity - O/C Tests Loc column with the Appointments Required – Road column to verify that there is more capacity than is required. If okay, proceed to Step #5.
3. If the report is for the incorrect month, contact operations to verify the parameters used for the Step that creates the report.
4. If more appointments are needed, follow the instructions in the Driver License User Documentation for MASTER SCHEDULE SETUP. When completed, request Operations to submit and run DLREN40J again to pick up the new schedule parameters. Repeat Steps #1 - #4 until there is more capacity than required.
5. If there is more capacity for road tests than is required, contact Operations via email and give the okay to run DLSCD1J, DLREN41J and DLXSCH1J. They will be run that evening.
6. When the report DLXSCH01 is received, the supervisor should check the dates and times to verify that the locations are open as stated. If not, contact Information Technology for the best course of action to remedy the situation.

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX O

STATE OF NEW HAMPSHIRE DEPARTMENT OF SAFETY INFORMATION TECHNOLOGY

CUSTOMER SATISFACTION SURVEY

DOCUMENTATION

Name of System/Application: _____

Your Name (optional): _____

Division: _____

1. Is the documentation easily understood?

YES NO

2. Do you review the documentation periodically?

YES NO

3. Was the documentation present at the time of installation?

YES NO

4. Did you assist with writing the documentation?

YES NO

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX O (continued)

STATE OF NEW HAMPSHIRE DEPARTMENT OF SAFETY INFORMATION TECHNOLOGY

CUSTOMER SATISFACTION SURVEY

REPORT DESIGN

Name of System/Application: _____

Your Name (optional): _____

Division: _____

1. Is everything being displayed on the reports as requested?

YES NO

2. Are the reports easily understood?

YES NO

3. Can the reports be modified for easier readability?

YES NO

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX O (continued)

STATE OF NEW HAMPSHIRE DEPARTMENT OF SAFETY INFORMATION TECHNOLOGY

CUSTOMER SATISFACTION SURVEY

SCREEN DESIGN

Name of System/Application: _____

Your Name (optional): _____

Division: _____

1. Is the information displayed on the screen well laid out?

YES NO

2. Is all the information being displayed?

YES NO

3. Are the heading descriptions adequate?

YES NO

SYSTEM DEVELOPMENT METHODOLOGY

APPENDIX O (continued)

STATE OF NEW HAMPSHIRE DEPARTMENT OF SAFETY INFORMATION TECHNOLOGY CUSTOMER SATISFACTION SURVEY TESTING/IMPLEMENTATION

Name of System/Application: _____

Your Name (optional): _____

Division: _____

1. Were you involved in the User Requirements phase for this project?
YES NO
2. Were you involved in the Logical Design phase for this project?
YES NO
3. Were you involved in the Process/Data Design phase for this project?
YES NO
4. What was your primary approach to testing?
A. Following supervisor's instructions
B. Free lance
C. Following the test plan
D. Other: _____
5. Have you found problems with the system?
YES NO
6. Was the problem reported and resolved in a timely fashion?
YES NO
7. Was sufficient test time allowed?
YES NO
8. Did the test system look like the system you thought you helped design?
YES NO
9. Did you have access to the programmer/analyst in a timely manner during testing?
YES NO
10. Overall, how do you feel about the process?

EXCELLENT	VERY GOOD	GOOD
NOT SO GOOD	BAD	

COMMENTS: _____

Thank you.